integrins. Particularly for tumor cells its remains critical that therapy resistance emerges from mutually and cooperatively interactions between integrins and transmembrane growth factor receptors. How exactly such interactions are executed and what consequences result from them for tumor cell behavior and bypass signaling for therapy resistance will be the great challenge to understand in the next years. Additional impact on these processes arises from extracellular matrix stiffness in tumors, which is commonly observed relative to normal tissues. Despite the fact that ECM stiffness essentially contributes to tumor progression, it remains unclear what its role is for tumor cell resistance to standard radio(chemo)therapy. What our current view on the above mentioned aspects of tumor biology and therapy resistance is will be presented.

SP-0643
Tumor radiosensitization by autophagy-inhibition
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Hypoxia is a common feature of tumors and an important contributor to malignancy and treatment resistance. We and others have shown that a lysosomal degradation pathway, autophagy, which enables cells to recycle and redirect nutrients to adapt to metabolic stresses, is required for the survival of hypoxic cells. Consequently, autophagy inhibition sensitized tumors to irradiation as determined by tumor growth delay experiments.
Our research focuses on unraveling the molecular mechanisms that are required for the activation of autophagy during hypoxia and to exploit these for therapeutic purposes. During this presentation, I will describe some of our recent findings and how we think that we can use autophagy targeting to improve tumor treatment. For example, we identified a radioresistant subset of glioblastoma that, when metabolically challenged, is highly dependent on autophagy for survival. Its dependency on autophagy provides a novel opportunity to delay recurrence of the tumors after treatment.

SP-0644
Hypoxic promotes EMT and stemness through suppression of Dicer
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Tumor hypoxia is associated with aggressive disease and poor clinical outcome in many types of cancer. This is due in large part to the ability of hypoxia to influence important signalling pathways that augment metabolism, angiogenesis, genetic instability, and metastasis. Recent data suggests that hypoxia may also promote stemness in normal stem cell microenvironments, and in the oxygen deprived microenvironments of some solid tumors. We have discovered a novel potential mechanism that may underlie these observations. We found that hypoxia causes a rapid loss of the enzyme DICER, an essential component in the miRNA biogenesis pathway. This occurs through an epigenetic mechanism that results in transcriptional silencing of the DICER1 gene. Loss of DICER during hypoxia or following genetic knockdown results in a defect in the creation of mature and functional miRNA, and a corresponding increase in miRNA precursor forms. However, loss of DICER has a differential effect on individual miRNAs and resulted in a particular loss of members of the miR200 family. Loss of mIR200 during hypoxia or following DICER1 knockdown results in derepression of its target ZEB1 and induces an epithelial-mesenchymal transition (EMT) characterized by an altered cell morphology, loss of E-cadherin, and acquistion of N-cadherin and vimentin. In human mammary epithelial cells transformed with dominant oncogenes, exposure to hypoxia or knockdown of DICER1 induces EMT and acquisition of stem cell properties including increased sphere formation, and expression of the cell surface markers $CD24^{low}$,$CD44^{high}$ which have been shown to enrich in tumor initiating cells. Importantly, both EMT and acquisition of stem cell properties are prevented during hypoxia by overexpression of mIR200b. DICER1 and hypoxia were also found to be negatively correlated in a large clinical series of breast cancer gene expression studies and both low DICER expression and high hypoxia were associated with poor outcome. Collectively, these data indicate that hypoxic suppression of DICER leads to increased stemness through repression of the mIR200 family and suggest this effect may contribute to the known association of hypoxia with metastasis and poor outcome in patients.

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SP-0645
Future changes and challenges in oncology and the role of the medical physicist
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Abstract not received

SP-0646
Medical physics for the future: How to get ready?
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There is no doubt that the story of Medical Physics has been a story of incredible success. Academic and professional contributions that Medical Physics has made in the areas of radiation therapy and imaging are too many to list. The academic advances have been successfully translated to the clinics, leading to wide recognition of Medical Physics as an essential health profession. This success has lead to maturation of the field, reflected in strong consolidation of the professional part of Medical Physics. Particularly in the US, this consolidation has been accelerated with the recently implemented strict CAMPEP (Commission on Accreditation of Medical Physics Educational Programs) requirements that have tightened education and training requirements for Medical Physics professionals, leaving little room for academic freedom and expansion of the field. This consolidation exposed challenges in front of the academic part of Medical Physics.
Concerned about the long-term future of Medical Physics as an academic and professional discipline, the American Association of Physicists in Medicine (AAPM) has established a Working Group on the Future of Medical Physics Research and Academic Training (WG FUTURE) with a charge “to initiate, coordinate and lead activities to secure sustainable growth and improvement in the long-term future environment for high quality research and academic training of physicists in medicine”. WG FUTURE has already had a significant impact through development of the AAPM Research Strategic Plan, organization of a series of “Expanding Horizons” workshops and initiation of many other activities.
In this talk, the activities of WG FUTURE will be outlined, particularly activities of high interest to the ESTRO members. In additional, potential synergistic activities will be proposed to further strengthen global collaboration of medical physicists and secure long-term future of the field.

SP-0647
How does medical physics retain responsibility for the patient?
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In the question how the physicist retains responsibility for the patient, is related to the legal as well as ethical considerations. In this paper we will provide an overview of the legal implications in different countries of the ESTRO membership as well as the US.
On an ethical level there is a need to decide to what level the physicist carries responsibility. It is clear however that the physicist is definitely responsible in providing the tools to the physician and to make sure these tools provide the advertised accuracy and quality control for these tools needs to be available.
On the other hand when the patient is being treated it is still the physicians' responsibility to decide which treatment (if any) will be most beneficial to the patient.
The question then remains: "which is the physicist's responsibility?" By using specific examples from errors and use cases we will investigate the different possibilities. Finally, a town hall round of questions is started to start discussions.

SP-0648
Future developments of medical physics inside and outside radiotherapy
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Abstract not received